ABSTRACT OF THE DISCLOSURE

Evaluation of a sample for the presence and qualitative nature of a microorganism can be performed in a single vessel by combining a natural abundance DNA sample with a sequencing mixture containing a primer pair, a thermally stable polymerase such as ThermoSequenase™ which incorporates dideoxynucleotides into an extending nucleic acid polymer at a rate which is no less than about 0.4 times the rate of incorporation of deoxynucleotides, nucleotide triphosphate feedstocks, and a chain terminating nucleotide triphosphate. The mixture is processed through multiple thermal cycles for annealing, extension and denaturation to produce a product mixture which is analyzed by electrophoresis.